Colonel Andrew M. Perkins, Jr.
District Engineer
Norfolk District, Corps of Engineers
803 Front Street
Norfolk, VA 23510-1096

ATTN: Mr. Steve Martin and Mr. Eric Summa
Regulatory Branch

Re: CENAO-CO-R 91-0625-18, 91-1053-18, 91-1412-18, 92-0129-18, Charles City County, and CENAO-CO-R 91-0321-09, Prince George County, Virginia

Dear Colonel Perkins:

This responds to your December 18, 1992 request for formal consultation under Section 7(a)(2) of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), regarding impacts of the Department of the Army (DOA) permit applications CENAO-CO-R 91-0321-09, James Clements (agent for Wortham Family Partnership); 91-0625-18, William Sanford; 91-1053-18, Russell and Nancy Jones; 91-1412-18, Lindell and Constance Cruise; and 92-0129-18, Richard Ward, on the bald eagle (Haliaeetus leucocephalus), a Federally listed endangered species. The Cruise, Jones, Sanford, and Ward sites are located on the James River in Charles City County, Virginia. The Clements site is located on Wards Creek, a tributary of the James River, in Prince George County, Virginia. This letter constitutes the U.S. Fish and Wildlife Service's (Service) Biological Opinion on these permit applications, as required by Section 7(b) of the Endangered Species Act. This letter also provides the comments of the Service and the Department of the Interior pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), which are included following the Biological Opinion.

Originally, it was thought that the sensitive joint-vetch (Aeschynomene virginica), Federally listed threatened, possibly occurred at the Clements, Cruise, Jones, and Ward properties. The Virginia Department of Conservation and Recreation, Division of Natural Heritage (DNH) made a site visit to Mr. Clements' project area on December 7, 1992 and determined that suitable habitat for this species did not exist. On October 29, 1992, the U.S. Army Corps of Engineers (Corps) visited the Cruise, Jones, and Ward properties. The Corps took photographs and documented the dominant vegetation. The photographs and field notes were submitted to the Service and subsequently to DNH. The DNH botanists determined that appropriate habitat for the sensitive joint-vetch was not found at these sites. Therefore, informal consultation was completed and further consultation on impacts to the sensitive joint-vetch pursuant to Section 7 of the Endangered Species Act is not required.

SCOPE OF THE BIOLOGICAL OPINION

This Biological Opinion covers the DOA permit applications CENAO-CO-R 91-0321-09,

James Clements; 91-1412-18, Lindell and Constance Cruise; 91-1053-18, Russell and Nancy Jones; 91-0625-18, William Sanford; and 92-0129-18, Richard Ward. The stated purpose of these projects is to provide private recreational access to the James River and to protect eroding shorelines. Permit application drawings of the five projects are included in Appendix A.

Mr. Clements has applied for a permit to construct a 54-foot by 4-foot pier and a 12-foot by 18-foot boat ramp and place 48 square feet of riprap along the shoreline. The proposed pier, boat ramp, and riprap will impact approximately 100 square feet of vegetated wetlands. The pier and boat ramp will extend approximately 30 feet channelward of mean high water (MHW). An 18-foot wide road leads to the boat ramp. Steps will connect from the road above the boat ramp to the pier. Riprap will be placed perpendicular to the shoreline on either side of the boat ramp and parallel to the shoreline under and on either side of the pier. In addition, uplands will be cleared to accommodate parking for three vehicles in a 1,800 square foot gravel area. Mr. Clements has indicated that this site has already been cleared. The pier and boat ramp are for the exclusive use of seven families in a planned subdivision at this 488-acre site. This facility will not preclude homeowners from building private facilities on their own waterfront lots. This project site is located on Wards Creek, approximately 8,000 feet from its confluence with the James River in Prince George County (Figure 1). Although this site is not within the immediate eagle-use area, aquatic recreational vehicles originating from this site have the potential to travel down Wards Creek and to and on the James River. Mr. Clements has stated that he is considering granting a conservation easement on 150 acres of shoreline or possibly on 440 acres of this site to the Virginia Outdoors Foundation.

The four other applicants are within the same residential area on the James River in Charles City County (Figure 2). Mr. and Mrs. Cruise have applied for a permit to construct a boat ramp and a 200-foot by 6-foot pier that will extend 199 feet channelward of MHW with a 40-foot by 16-foot boat house on top of the channelward portion of the pier. The pier will impact 20-30 square feet of riverine wetlands and 100-200 square feet of uplands. The boat house roof will be used as a deck and screened area. The boat ramp will be 30 feet by 8 feet and extend approximately 20 feet channelward of MHW. The boat ramp will be next to the pier. Mr. and Mrs. Cruise have not cleared shoreline; they want to clear 20-30 square feet of riverine wetlands and 100-200 square feet of adjacent riparian uplands for access. Approximately 75 square feet of the upland clearing will involve removal of an existing dilapidated structure.

Mr. and Mrs. Jones have applied for a permit to construct a bulkhead, boat ramp, pier, and boat house. The bulkhead will be 148 linear feet located landward of MHW. The boat ramp will be 8 feet by 10 feet and extend 10 feet channelward of MHW. It will be located on the east side of the pier. Adjacent to the boat ramp will be a 16-foot by 16-foot deck channelward of MHW. From the deck, a 100-foot by 5-foot pier with a 20-foot by 5-foot finger pier will extend channelward. The boat house will be 15 feet by 10 feet and will be built on the landward edge of the finger pier. Construction of the pier, deck, and boat ramp will require clearing 50 square feet of riverine emergent wetlands. Bulkheading will impact approximately 150 square feet of emergent wetlands and 150 square feet of herbaceous uplands. After reviewing the draft Biological Opinion, Mr. Jones indicated that the drawings included with his original permit application are misleading and that his boat house should be 25 feet in length.

Mr. Sanford has applied for an after-the-fact permit for a pier. Mr. Sanford received a Norfolk District Regional Permit 17 to construct the pier on May 22, 1991. However, this project did not undergo Section 7 consultation. The Corps issued a cease and desist order on July 10, 1991, but the pier had already been completed. The pier is 200 feet by 6 feet with a 10-foot by 30-foot T-head and eight mooring piles around it.

Mr. Ward has applied for a permit to construct a pier and boat ramp. The pier will be 150 feet by 6 feet with a 24-foot by 6-foot T-head. The pier will extend 150 feet channelward of MHW. The boat ramp will be 30 feet by 8 feet and will extend 30 channelward of MHW. The ramp will be built next to the pier. Construction will not require any additional vegetation clearing and will not impact any jurisdictional wetlands. Approximately 240 square feet of intertidal and subaqueous bottom will be filled for the boat ramp. After reviewing the draft Biological Opinion, Mr. Ward modified his permit application to include a boat house and an L-head (drawings attached).

CONSULTATION HISTORY

Consultation history regarding this project is provided in Appendix B.

BIOLOGY AND STATUS OF THE BALD EAGLE

The bald eagle (Haliaeetus leucocephalus) is a large raptor (bird of prey) that was chosen as the United States' symbol in the late 1700s due to its size and majesty. With the exception of the California condor (Gymnogyps californianus), the bald eagle is the largest raptor in North America, with a wing span of 6.5 feet. The bald eagle is found primarily near seacoasts, rivers, and lakes of North America; thus its colloquial name, the "sea eagle." A scavenger, the bald eagle feeds primarily on fish and carrion. Bald eagles tend to be a social species. Non-nesting birds are often found in large numbers in areas where feeding opportunities are good and in communal night roosts.

Although adult bald eagles are known for their white heads and tails, immature and juvenile birds are mainly brown. Adult plumage develops slowly, with full plumage not in place until the birds reach four to five years of age. Adult birds mate for life, establishing nesting territories that they return to each year. Nesting pairs may remain near their territory year round, particularly towards the southern range of the species. Immature and non-mated eagles range widely, migrating north and south from their nest territories. Northern pairs also migrate south during the winter when rivers and lakes freeze. These birds tend to congregate in both summer and winter concentration areas, locations where feeding opportunities are good and human disturbance is minimal.

The widespread use of DDT was primarily responsible for the precipitous decline of the bald eagle in North America in the 1960s and the listing of the Southern bald eagle as a Federally endangered species in 1967. (The remaining bald eagle populations in the coterminous United States were listed as endangered or threatened in 1978 and the "Southern" designation was dropped.) This pesticide entered the food chain and built up to toxic levels in eagles, resulting in reproductive failure. With the cancellation of the pesticide

registration for DDT by the U.S. Environmental Protection Agency, eagle populations have started to recover. Habitat loss now poses a greater threat to the bald eagle since its preferred habitat, coasts and shorelines, is also where most of the human population growth is occurring in the United States.

The bald eagle populations of the United States have been divided by the Service into five recovery groups: Pacific, Southwest, Northern, Southeast, and Chesapeake. Birds from the Northern, Southeast, and Chesapeake populations use the James River area. The Southeast bald eagle population includes birds from Florida, Georgia, South Carolina, North Carolina, Kentucky, Tennessee, West Virginia west of the 80th meridian, Alabama, Mississippi, Arkansas, Louisiana, and Texas west to the 100th meridian (U.S. Fish and Wildlife Service 1984). To reclassify this population as threatened, the recovery plan calls for documentation of 600 occupied breeding areas (i.e., the presence of a pair of eagles during the breeding season in an area which contains a nest) distributed in at least 9 of the 12 southeastern states. The recovery plan further states that reproductive success must be greater than 0.9 young per occupied nest, 1.5 young per successful nest, and at least 50% of the nests successful in raising at least one young, based on a three-year average. Currently, the recovery goal of 600 breeding areas has not been reached, nor has the distribution goal (Fleming 1993, pers. comm.).

Twenty-four states are included in the Northern bald eagle population. According to the Northern States Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1983), 96% of the 568 known occupied breeding areas and 90% of all young produced occurred in Minnesota, Maine, Michigan, and Wisconsin in 1981. To reclassify the population as threatened, the recovery plan indicates that 1,200 occupied breeding areas must be distributed over at least 16 states, with an average annual productivity of at least one young per occupied nest. Currently, the goal of 1,200 occupied breeding areas has been reached, but nesting is not distributed over a multi-state area as required to meet recovery goals (Nickerson 1993, pers. comm.).

The recovery and reclassification to threatened status of the Chesapeake Bay Region bald eagle population depends on the availability of enough undisturbed roosting and nesting habitat to accommodate 175-250 nesting pairs with a success rate of 1.1 young per active nest, concurrent with showing sustained progress in habitat protection measures (U.S. Fish and Wildlife Service 1990). A goal of management and recovery is to ensure preservation of selected, well-distributed habitats (U.S. Fish and Wildlife Service 1989). The recovery plan indicates the need to "Minimize disturbance and loss of bald eagles. Activities of man, either directly against the birds themselves, or indirectly through disturbance of areas frequented by bald eagles, continues to be a serious limiting factor to Chesapeake Bay Region eagles" (U.S. Fish and Wildlife Service 1982). The Chesapeake region currently supports approximately 293 breeding territories, which meets the recovery plan's criteria for reclassification to threatened (Nickerson 1993, pers. comm.). However, available habitat is continuing to decline, affecting the ultimate carrying capacity of the Chesapeake Bay Region (U.S. Fish and Wildlife Service 1990).

Advanced notice of a forthcoming proposal to reclassify the bald eagle from endangered to threatened in certain portions of its range was published in the Federal Register on February 7, 1990 (50 CFR Part 17). The advanced notice includes two of the three populations that use

the James River area - the Northern and Chesapeake Bay recovery populations. The Southeastern recovery population was not included in the advanced notice of reclassification. The official proposal itself has not been published. It must be recognized however, that if the bald eagle's status is reclassified to threatened in parts of its range, the species will still be protected under the Endangered Species Act. The term "threatened" indicates there is still a possibility that the species could face extinction if further protective measures are not undertaken. The protection of roosting and foraging habitat is critical to the maintenance and recovery of this species.

The summer bald eagle concentration located on the seven-mile stretch of the James River between Powell and Wards Creeks (Figure 3) was discovered in 1978 and is the largest known summer concentration site on the East Coast (Byrd 1991, pers. comm.). It has come to be identified as the Powell Creek eagle concentration area. As stated above, the concentration area is used by eagles from the Northern, Southeast, and Chesapeake recovery populations. Clark (1992) found that at least 100 eagles were present along the shoreline during any one time between June and August. During 1991, over 100 eagles were seen during six separate boat surveys, the highest count was 137 individuals (Bradshaw 1991, pers. comm.). Eagles using this area feed and perch along the James River during the day and roost in adjacent tracts of large, wooded areas at night, but the majority do not nest in the vicinity. There are two large communal night roosts along this river stretch, one of which is located on the James River National Wildlife Refuge (3,537 acres), purchased by the Service in March, 1991. In January, 1992 an additional 613 acres were added to the refuge. Several smaller scattered sites are also used as roosts. It is thought that eagles use this concentration area because of a dependable food source and relatively undisturbed shoreline, but further studies are needed to determine exactly what attracts birds to this particular location (Bradshaw 1991, pers. comm.).

The majority (60%) of bald eagles using this section of the James River are immature birds (Bradshaw 1991, pers. comm.). Gerrard et al. (1980) found that immature birds typically do not remain in any one place for more than one or two days during their first three years of life. Marked birds from Florida, South Carolina, Tennessee, and New Jersey have been identified within the concentration area (Bradshaw 1991, pers. comm.). Most adult eagles using the area are thought to be post-breeding birds from the southeast United States (U.S. Fish and Wildlife Service 1989). However, local breeding pairs stay in the area year-round. Transient eagles begin to arrive in early April (U.S. Fish and Wildlife Service 1989). Birds seen during July and August are a mix of Chesapeake Bay birds, summering southern eagles, and northern eagles which are beginning to migrate south for the winter (Wallin and Byrd 1984). It has been estimated that up to 1,000 eagles may use the Powell Creek concentration area over the course of a summer (Byrd 1989, pers. comm.). By October or November, the majority of the birds have left the area (Bradshaw 1991, pers. comm.). There are also seven bald eagle nests within the Powell Creek concentration area, all of which are presently active. One of these nests is located along Wards Creek.

During the day, eagles spend approximately 94% of their time perching (Gerrard et al. 1980, Watson et al. 1991). During the breeding season, 54% of that time is spent loafing, 23% foraging, and 16% nesting (Watson et al. 1991). Eagles prefer high perches in trees that rise above the surrounding vegetation to provide a wide view that faces into the wind (Gerrard et al. 1980). Birds often locate prey from a shoreline

perch, and hunting forays from perches appear to be more successful than those initiated from flight (Jaffee 1980). Gerrard et al. (1980) found that after a successful fishing trip, eagles flew to a low perch to feed; these perches were less than 33 feet above the water and were well below the level of neighboring tree tops. Clark (1992) observed that, within the Powell Creek concentration area, eagles perched in shoreline trees, flew out to pick up fish, and then returned to the perch to eat.

The main diet of bald eagles on the Chesapeake Bay during the summer is fish (U.S. Fish and Wildlife Service 1982). Therefore, the majority of birds are likely to be present along shorelines at any given time (Wallin and Byrd 1984). Foraging is a key behavior that influences daily and seasonal activity budgets (Watson et al. 1991). Foraging patterns may be strongly influenced by tidal fluctuations. Several studies have found that birds foraged much more than expected during low tides and less than expected at high tides (McGarigal et al. 1991, Watson et al. 1991). In King George County, Virginia overall bald eagle foraging frequency was highest from 4:35 to 6:00 a.m., with a small decline from 6:00 to 10:00 a.m. At 10:00 a.m. foraging decreased further, then remained the same until 6:00 p.m. when it decreased rapidly (Jaffee 1980). Within the Powell Creek concentration area, the number of foraging eagles decreased as time of day increased (Clark 1992). Feeding behavior can be disrupted by the mere presence of humans (Stalmaster and Newman 1978). McGarigal et al. (1991) found that because eagles had to spend more time scanning for intruders as human activity in an area increased, feeding efficiency declined.

Most summer eagle roosts in the Chesapeake Bay region were found in greater than 100-acre forest blocks and were further from human development than random sites (Buehler et al. 1991b). Ninety-five percent of the roosts were within 2,362 feet of water and 50% were at least 2,231 feet from the nearest building (Buehler et al. 1991b). Trees used for roosting were larger in diameter, taller, and more accessible than other available trees (Keister and Anthony 1983, Buehler et al. 1991b). Another important attribute of communal roosts is their proximity to food sources (Keister and Anthony 1983). Because food for eagles occurs in the river, suitable habitat along the river is important. Clark (1992) found that, within the Powell Creek eagle concentration area, distance to the roost was the most important habitat factor that influenced eagle distribution on the shore. Buehler et al. (1991b) determined that on the Northern Chesapeake Bay "...fewer than 2% of the random trees met the minimum habitat values of roost trees, indicating that suitable roost trees are scarce relative to other trees. This relative scarcity suggests that if shoreline forest is removed indiscriminantly, roost habitat could become limiting to the bald eagle population in the future."

EFFECTS OF THE FEDERAL ACTION ON THE BALD EAGLE AND ITS HABITAT

As defined in 50 CFR 402.02 "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. The "action area" is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The direct and indirect effects of the actions and activities resulting from the Federal actions must be considered in conjunction with the effects of other past and present Federal, State, or private activities, as well as the cumulative effects of reasonably certain future State or private activities within the action area.

The action area for this Biological Opinion has been determined by the Service to be the James River and 1,640 feet inland from its shoreline between Powell and Wards Creeks, including the entire Cruise, Jones, Sanford, and Ward properties, and Wards Creek and 1,640 feet inland from its shoreline from its confluence with the James River upstream to the Clement's southernmost property boundary. The action area includes the entire waters and immediate shoreline of the concentration area and Wards Creek because the applicants will use the waters upstream and downstream of their proposed facilities by means of aquatic recreational vehicles (e.g., boats). Wards Creek upstream of the Clements property is not included because it receives little eagle use.

Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process.

The shores of the James River in the action area were originally mixed pine-hardwood forested uplands and emergent and forested wetlands. At various times during the past, sites have been cleared for plantations, agricultural use, forestry practices, and water-dependent activities. At present, most of this shoreline is held by a few landowners (Clark 1992). The north shore of the James River, Charles City County, within the action area is zoned agricultural. Charles City County currently zones single-family residential housing as agricultural. The only residential area on the north shore of the James River within the action area is the one involved in this consultation. Immediately to the west of this residential area is the Charles City County park and public fishing pier (Biological Opinion March 13, 1992). This fishing pier receives daily use. During the first summer after construction, five or more individuals used the pier at any given time (Bragg 1993, pers. comm.). A 24-acre park is associated with the pier. Facilities at the park include two permanent restrooms, two parking lots, picnic areas, and a trail leading to a scenic overlook. The state-maintained road leading to and ending in the park was widened, requiring clearing of mature trees. On the south shore of the James, Prince George County, within the action area, there are 2.4 linear miles of shoreline zoned as industrial; the remainder is zoned agricultural. Within the industrially zoned area, there are no businesses at this time (Brady 1993, pers. comm.). One of the large landowners on the south shore of the James River is the Service. In 1991, the Service purchased land to create the James River National Wildlife Refuge. The Refuge has been expanded since the original purchase and currently encompasses more than three miles of shoreline. The refuge is very important for the continued success of the eagle concentration area since it contains one of the two large communal night roosts within the eagle concentration area.

Mr. Clements project is located within a planned subdivision on Wards Creek. The subdivision will consist of seven five-acre lots. Currently, one house is located on the tract, six others are planned. At completion, approximately 36 acres will be developed out of the 488-acre tract. This tract has approximately two miles

of shoreline, most of which will be left undisturbed. The shoreline is dominated by bald cypress (Taxodium distichum), big cordgrass (Spartina cynosuroides) and pickerelweed (Pontederia cordata).

The other four projects are located in a low-density residential area on the north shore of the James River. This 81-acre area is located on a steep-sloped ridge overlooking the river and is owned by ten families. The site includes approximately 2,500 feet of eroding shoreline. Portions of the shoreline include a narrow wetland/riparian fringe. Six of the land holdings at this site have been at least partially cleared, including the shoreline. Houses and outbuildings have been constructed on five of the properties and a trailer is on the sixth. The Cruises, Joneses, and Wards have "driveways" that extend on or through the ridge to just above MHW. These "driveways" can be used as boat ramps during high tide and in their present configuration do not require Corps' authorization. The Cruises and Joneses have indicated that they use their driveways to put in and take out their boats using a tractor. Mr. Sanford is using his pier to moor his two boats.

Mr. and Mrs. Cruise have a trailer on-site and plan to build a house. Their yard slopes sharply from the planned house site. The slope is steep, approximately 1:1, and has not been cleared. It is vegetated with mid-successional trees, shrubs, and vines. There is a low, narrow terrace just above the beach and wetlands. The beach and adjoining wetlands at the base of the slope appear to be eroding. Most of the shoreline is a sand beach with scattered cobbles. There is a narrow wetland fringe two to four feet wide along the shoreline that is dominated by shrub and herbaceous species including: bald cypress, coastal plain willow (Salix caroliniana), swamp dogwood (Cornus stricta), sycamore (Platanus occidentalis), false nettle (Boehmeria cylindrica), jewelweed (Impatiens capensis), Virginia dayflower (Commelina virginica), New York aster (Aster novae-belgii), sneezeweed (Helenium autumnale), and virgin's bower (Clematis virginiana).

Mr. and Mrs. Jones have a house on site. Their yard slopes sharply (more than 1:1 slope) down to the river. The slope was cleared within the last few years and presently is vegetated with early successional herbs, grasses, and vines. The beach and adjoining wetlands at the base of the slope appear to be eroding severely. Most of the shoreline is a beach of sand and scattered cobble. Less than 500 square feet of vegetated wetlands and/or riparian area is present along the shoreline and is dominated by low herbaceous species including: bald cypress, arthraxon (Athraxon hispidus), New York aster, microstegium (Microstegium vimineum), beggar's tick (Bidens mitis), sneezeweed, swamp smartweed (Polygonum setaceum), and virgin's bower.

Mr. Sanford has an existing pier and mooring piles. From the pier, steps connect to a deck landward of MHW and then the steps continue up to the top of the slope. The slope has not been cleared except for the construction of the stairs and deck. Mr. Sanford has cleared some of the upland woods and constructed a house on the site. A portion of the site was previously occupied by a house.

Mr. Ward has cleared some vegetation and now has a well-established herbaceous and shrub

layer; the steep banks have not been cleared. The yard slopes sharply from the house to a five- to six-foot wide upland terrace. The existing slope is steep and vegetated by mid-successional trees, shrubs, and vines. The beach and adjoining wetlands at the base of the slope appear to be eroding. Most of the shoreline is a sand beach with scattered cobbles. There is a riparian wetland fringe of approximately 500 square feet along part of the shoreline that includes: bald cypress, sycamore, Virginia willow (Itea virginica), New York aster, sneezeweed, and beggar's tick.

Based on 1982 aerial photographs and a July 20, 1992 boat survey, there are 12 piers, three boathouses, and two piers with boathouses within the eagle concentration area. This is a net increase of three piers and two boathouses constructed since the 1982 aerial photographs. Three of the piers (including Mr. Sanford's) and one of the boathouses, as well as two boat ramps, are within the residential area. In addition, one of the property owners in the residential area not involved in this consultation frequently moors a sailboat to an offshore buoy in front of the residential area. One of boathouses and one of the piers are on Wards Creek, are actively used, and located approximately 3,000 feet upstream of the James River (5,000 feet downstream of Mr. Clements project site). One of the 12 piers is the Charles City County public fishing pier (Figure 2).

As discussed in the "Biology and Status of the Bald Eagle," the action area is important for three of the bald eagle recovery populations. It is used by eagles during the summer for perching (i.e., searching for food, eating, or loafing), roosting, and foraging. It is used year-round by the seven pairs of eagles that have established breeding territories within the concentration area. Currently, eagles in the action area are adversely impacted from land development and human use. Land has been cleared and developed for the residential area involved in this consultation, the Charles City County park, and the existing shoreline structures mentioned above. This has resulted in loss of perching, roosting, and foraging habitat. The presence of structures has caused portions of the concentration area to be unsuitable for eagles. Eagles have also been impacted by human use. As mentioned above, the Charles City County fishing pier and park receives daily use. The existing shoreline structures and houses close to shore are also subject to human activities that flush eagles and cause them to avoid these areas. However, eagle disturbance from human use in the action area has resulted mainly from boat traffic. Besides boats entering the James River within the action area from private facilities, there is a boat ramp and marina approximately four miles upstream in Prince George County. Boat traffic, both moving and stationary, adversely impacts eagles. As will be discussed in the "Effects of the Federal Action," boats can cause eagles to flush and avoid areas resulting in loss of foraging time and functionally usable habitat.

Effects of the Federal Action

In evaluating the effects of the Federal action under consideration in this consultation, 50 CFR 402.2 and 402.14(g)(3) require the Service to evaluate both the direct and indirect effect of the action on the species, together with the effects of other activities that are interrelated or interdependent with the action that will be added to the environmental baseline.

Direct impacts to bald eagles will result from the four projects proposed on the James River

through: (1) construction of the various shoreline facilities (e.g., boat ramps, piers) and erosion control structures (e.g., bulkhead), (2) presence of structures along the shore, and (3) permanent habitat loss. There will not be direct impacts to eagles from the Wards Creek project. Indirect impacts to eagles will result from the four projects proposed on the James River through: (1) disturbance through human activity and vehicles during normal use of the shoreline facilities and (2) use of aquatic recreational vehicles such as boats. Indirect impacts to eagles will result from the Wards Creek project through the use of aquatic recreational vehicles.

The direct effects of the action on bald eagles will include the disturbance created during construction of boat ramps, boat houses, piers, decks, riprap, and bulkheads. Construction of these will necessitate human activity, a considerable amount of noise, use of heavy equipment, and shoreline and upland vegetation clearing. These activities will disturb the birds during early morning foraging attempts and throughout the day at perch sites. It is likely that during these construction activities, birds will vacate the area, thereby reducing the amount of available foraging and perching habitat along the James River. Human activity resulting in even temporary disruption of the bird's environment represents a major source of potential disturbance in many eagle populations (McGarigal et al. 1991). Human disturbance in perching areas can interrupt feeding and cause birds to relocate (Fraser 1988). Buehler et al. (1991a) seldom observed eagles on the northern Chesapeake Bay within 1,640 feet of human activity and found that the birds rarely used developed areas or areas frequented by people on foot. During the summer, birds on the northern Chesapeake Bay flush, on average, when humans get within 577 feet (Buehler et al. 1991a). Once birds are disturbed (i.e., flushed), they do not return to the area until several hours after the disturbance has occurred and only when the disturbance no longer persists (Stalmaster and Newman 1978; Byrd 1989, pers. comm.). Disturbance may result in increased energy expenditures due to avoidance flights and decreased energy intake due to interference with feeding activity (Knight and Knight 1984).

In addition to disturbance from construction of the proposed facilities, the presence of these structures will result in functional habitat loss. Clark (1992) found that within the Powell Creek eagle concentration area, eagle abundance decreased with increased numbers of "boat landings." Boat landings were defined as "... piers, boat ramps, and sites where boats are regularly landed or anchored on the shore...." Wallin and Byrd (1984) had similar findings within a concentration area on the Potomac River in Virginia. Clark (1992) recommended that additional boat landings within or adjacent to the eagle concentration area be discouraged, including those on tributary creeks of the James River within the eagle concentration area. When shoreline is developed, it is irretrievably lost as eagle habitat (Buehler et al. 1991b). Buehler et al. (1991b) state, "We assume there is an upper limit to the number of eagles that can be supported by any stretch of undeveloped shoreline. Thus, as shoreline continues to be modified, we believe that the length of remaining undeveloped shoreline may become the limiting factor for some eagle populations, including the Chesapeake population." Optimum eagle management should include maintenance of substantial areas of undeveloped shoreline (Fraser et al. 1985). Clark (1992) concluded that "increased numbers of waterfront buildings and decreased amounts of shoreline woodland also have been shown by this study to negatively affect eagle shoreline use."

Habitat loss and disturbance will also result from clearing shoreline vegetation. Clark (1992) found that within the Powell Creek eagle concentration area, woodland width (defined as "maximum width of woodland in each sampling plot measured in meters inland from the shore"), snags (defined as "number of standing dead trees over five meters in height on the shore of each sampling plot"), and woodland length (defined as "maximum length of woodland in each sampling plot measured in meters along the shoreline") were correlated with eagle numbers. Eagle abundance increased with woodland width and length and number of snags, which are indicative of the amount of forest habitat available. In addition, Clark (1992) found that these three variables indicated lack of development, presence of a vegetation screen from human activities, and the presence of perching habitat. Removal of tall, large diameter trees will decrease the amount of perching and roosting habitat available. Forest management of eagle roosts should protect existing tall, large diameter trees and promote their growth in stands where they are lacking (Buehler et al. 1991b). It has been documented that eagles are more tolerant of sounds when the sources were partially or totally concealed from their view (e.g., Stalmaster and Newman 1978, Wallin and Byrd 1984). Strips of vegetation that reduce line-of-site will allow closer presence of humans and provide perching and roosting trees (Stalmaster and Newman 1978).

Indirect effects are defined as those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). Indirect effects on eagles will occur through normal human use of and activity around the proposed structures for the four projects on the James River. Anticipated uses include preparing aquatic recreational vehicles for launching, placing aquatic recreational vehicles in and removing them from the river, fishing, sun bathing, and swimming. These human activities will result in disturbance to eagles and it is likely that during these activities birds will vacate the area, thereby reducing the amount of available foraging and perching habitat along the James River. As discussed above, human activity resulting in even temporary disruption of the bird's environment represents a major source of potential disturbance (McGarigal et al. 1991). Eagles rarely used developed areas or areas frequented by people on foot and are seldom seen within 1,640 feet of human activity (Buehler et al. 1991a; Stalmaster and Newman 1978; Byrd 1989, pers. comm.; Knight and Knight 1984).

Recreation in the Chesapeake Bay region has increased dramatically since the 1970s, resulting in disturbance to eagles in breeding and feeding areas. These activities have caused birds to be displaced from prime habitat and have resulted in reductions in reproductive activity and success (U.S. Fish and Wildlife Service 1982). Early morning human activities are potentially the most disruptive to eagle foraging activity (McGarigal et al. 1991). It is likely that the proposed shoreline structures will be used frequently during the early morning hours (before 10 a.m.) for fishing from the piers and preparing and launching boats or other aquatic vehicles from boat ramps or boat houses. The majority of use of the proposed facilities is likely to occur between April and November, coinciding with summer eagle use of the area. Chronic human disturbance may result in disuse of areas by eagles (U.S. Fish and Wildlife Service 1989). Based upon the timing and amount of human activity, it is likely that up to 1,640 feet channelward of the shoreline and on either side of a given structure will be rendered functionally unsuitable as foraging and perching habitat for bald eagles. Since piers, boat ramps, and boat houses are already present in the vicinity of the four James River projects and since three of the four applicants already moor or launch their boats on the river, at least some avoidance of this area by eagles has probably already occurred.

All five applicants plan to use boats at their facilities. Mr. Jones, Mr. and Mrs. Cruise, and Mr. Clements have all indicated that they plan to use their boats for fishing. It is likely that they will fish on tributaries within the eagle concentration area as well as on the James River. Boating activity can adversely impact eagles because it disrupts feeding activity and affects large areas in short periods of time (Knight and Knight 1984). McGarigal et al. (1991) found that eagles usually avoided an area within 656 to 2,952 feet of a single stationary experimental boat, with an average avoidance distance of 1,300 feet. In effect, a single stationary boat displaced eagles from 69 to 124 acres of available foraging habitat. Therefore, a single boat docked at one of the proposed structures or anchored offshore could result in an area of the James River up to 2,952 feet around the boat becoming functionally unsuitable as foraging and perching habitat. As mentioned above, this is likely already taking place to a degree, in the vicinity of the four applicants' properties because of existing uses.

Moving boats disrupt eagles as well as stationary boats. Buehler et al. (1991a) found that on the northern Chesapeake Bay, eagles were flushed by an approaching boat at an average distance of 575 feet. Within the Powell Creek eagle concentration area, birds perched on the shoreline within 164 feet of the river are likely to be flushed (Bradshaw 1993, pers. comm.). Byrd (1989, pers. comm.) has observed that when eagles are flushed by a boat from perch sites along the James River, they usually fly inland and cease foraging for at least several hours. However, eagles may become accustomed to human activities that occur on a regular basis without impacting eagles. For example, within the Powell Creek eagle concentration area, barges that maintain steady speeds and remain within the channel do not cause eagles to flush. Unlike commercial shipping, activities of recreational boaters are not predictable and thus are especially disruptive to birds (Wallin and Byrd 1984). Clark (1992) recommended that increased recreational boating use of the Powell Creek concentration area be discouraged in order to preserve the area and prevent eventual abandonment by eagles.

Boat traffic resulting from the five proposed projects will be disruptive to perching and foraging eagles. As a boat or boats leave an applicant's property and travel in the eagle concentration area, birds will be flushed and likely will fly inland. During days when several boats leave and return to the proposed facilities and travel up and down the James and/or its tributaries, there is a high probability that eagles will be flushed multiple times, forcing them to fly inland for prolonged periods. This results in increased time spent scanning for boats while trying to forage, yielding a decrease in food intake and/or inability to forage after being forced inland from numerous disruptions. Reduced foraging by the nesting eagles within the action area could seriously impact the survival of their young. It should be noted that because of the large number of eagles within the concentration area, even one boat may flush a large number of birds resulting in a significant disruption of foraging for several hours. The construction of boat ramps can result in an increase in boat traffic greater than anticipated from the number of applicants because guests, neighbors, and relatives are likely to use the applicants' boat ramps as well. It is not unlikely that during the summer and on holidays (e.g., Fourth of July, Memorial Day) more than the one or two boats owned by the applicants will utilize the proposed boat ramps. Because the use of aquatic recreational vehicles are unpredictable and eagle numbers vary on a given shoreline segment, a total acreage of disturbance cannot be determined. However, several possible scenarios are likely. For example, when conducting bald eagle counts within the concentration area during the summer, the Virginia Department of Game and Inland Fisheries (VDGIF) personnel run a single boat along the shoreline down one side of the James River and up the other. VDGIF

has flushed more than 150 individual eagles within a few hours. This activity is not that different than that of an angler moving from one fishing location to another. Although it is not likely that an angler would travel along both shorelines within a short time period, during one day he/she is likely to move their boat multiple times, flushing eagles during each move and once the boat is stationary, eagles will avoid the area around the boat, resulting in additional disturbance.

As defined in 50 CFR 402.02, interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from

the action under consideration. No activities interrelated to and interdependent with the actions are known at this time.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in Section 7 and, therefore, are not considered cumulative with the proposed action.

Within the eagle concentration area, the Cruises plan to build a house on their property and have already cleared the house site. The Joneses and Wards already have houses on their lots. Mr. Sanford has recently constructed a house and is currently completing the interior. Construction of houses and associated land clearing within the eagle concentration area will result in disturbance of eagles through human activity in the area, loud noise, and use of heavy equipment. Post-construction, disturbance will continue throughout the residential area from human activity in the form of noise, general movement, yard maintenance, and vehicle traffic. As discussed previously, noise and human activity will likely cause the birds to vacate the area. Long-term, clearing of wooded vegetation decreases the total amount of perching and roosting habitat for eagles and increases visibility of human activity. Combined with the presence of existing and construction of new houses and associated human activity, use of this area by eagles will continue to be prevented.

A residential area with six waterfront lots is proposed in Charles City County south of Queens Creek. As discussed under "Effects of the Federal Action," removal of tall, large diameter trees will decrease the amount of perching and roosting habitat available. It has been documented that eagles are more tolerant of sounds when the sources were partially or totally concealed from their view (e.g., Stalmaster and Newman 1978, Wallin and Byrd 1984). Strips of vegetation that reduce line-of-site will allow closer presence of humans and provide perching and roosting trees (Stalmaster and Newman 1978). Clark (1992) found that within the Powell Creek concentration area, eagle abundance increased with woodland width and length and number of snags which is indicative of lack of development, presence of a vegetation screen from human activities, and the presence of perching habitat. Eagle

numbers decreased with increased numbers of buildings and amount of medium duty roads. Clark (1992) concluded that "decreased amounts of shoreline woodland also have been shown by this study to negatively affect eagle shoreline use." Buehler et al. (1991b) found that bald eagle use of shoreline was inversely related to building density (magnitude of effect was greatest in summer) and directly related the development set-back distance. The Service is not aware of any activities proposed within the concentration area in Prince George County.

Activities outside the eagle concentration area may have adverse impacts on eagles as well. Charles City County previously (prior to construction of the park and fishing pier) applied for a Corps' permit to build a public boat ramp at the County park. The County continues to pursue options for boat ramp construction. If built within or near the eagle concentration area, a public boat ramp would greatly increase the amount of boat traffic on the James River and subsequently result in significant adverse impacts to eagles. In Charles City County, 2.5 miles downstream from the eagle concentration area is a single-family housing area with 14 waterfront lots. Slightly downstream from this site is 1.5 miles of shoreline zoned as industrial. This industrial zone currently contains a marine construction company. A truck-body building company is proposing to construct a port within this industrially zoned area that would receive boat traffic from up- and downstream. The owners of this company would also live at the site if it is constructed. Approximately 6.5 miles downstream of the eagle concentration area is Little Bay Acres subdivision with 17 waterfront lots. Downstream of this subdivision is a residential area with 10 waterfront lots. Approximately 2.5 miles upstream from the eagle concentration area are two residential areas, with a total of 18 waterfront lots. Three miles upstream from the eagle concentration area (west side of Benjamin Harrison Bridge) is a proposed housing area with seven waterfront lots.

On the south side of the James, approximately 0.5 linear miles upstream of the eagle concentration area is an area zoned residential that contains 10 waterfront lots. Approximately 2.5 miles upstream of the eagle concentration area is Beechwood Manor subdivision with 15 shoreline lots. Approximately three linear miles upstream, adjacent to Jordan Point Marina, is the Jordan on the James subdivision that has 22 waterfront lots. Approximately two shoreline miles upstream of the eagle concentration area is 2.75 miles of shoreline that is zoned residential (includes Beechwood Manor and Jordan on the James). This large residential area contains several subdivisions that do not border the water, but contribute to habitat loss adjacent to the eagle concentration area. Jordan Point Marina, owned by the Jordan Point Yacht Club, is located on the south shore of the James River, approximately four miles upstream from the concentration area. The marina has boats slips and a pay ramp. This marina also sponsors a boat race during the summer; high speed boats leave the marina, pass through the eagle concentration area, and continue downstream where they turn around and return to the marina. At this time, the Service is not aware of any proposed development downstream of the eagle concentration area in Prince George County.

Currently, there are 17 waterfront structures on the shoreline within the eagle concentration area, including Mr. Sanford's pier. The proposed projects would add three structures (Mr. Clements proposed facilities are not within the eagle concentration area). Within the concentration area, a residential area with six waterfront lots is proposed. Within three miles upstream and 6.5 miles downstream, 106 waterfront residential-type lots already exist and seven more are proposed. If the proposed waterfront lots are

constructed, this would result in a total of 119 waterfront residential lots. At least a portion of the property owners of these waterfront lots are likely to apply for permits to construct water-related facilities (e.g., piers, boat ramps). Some of these residential areas may apply for community facilities, such as a boat ramp, that would allow individuals other than riparian property-owners to access the water. Even if only one half of the 119 riparian landowners applied for and received permits to construct shoreline facilities, that could be an increase of 60 boats, assuming only one boat per property and no boat ramps. If only one of the larger subdivisions, such as Beechwood Manor (over 250 lots), applied for a community facility that included a boat ramp, that could result in a dramatic increase in boat traffic. Besides having more than 250 residents that could use the facilities, it is likely that guests would be permitted to use it. It is also likely that such a community facility would not prevent the 15 riparian lot owners from applying for private shoreline facilities.

The types of boats likely to kept at private facilities are motorized pleasure and fishing boats less than 25 feet in length. Based on studies done in other areas, the Virginia Division of Planning and Recreation Resources has indicated that most boaters usually stay within five miles of the point at which they launch their boats (Commission of Outdoor Recreation 1982). In addition to boats launched between Powell and Wards Creeks, those launched within five or less miles outside of the eagle concentration area would be expected to frequently utilize the stretch of the river that is used by eagles. We would anticipate that anglers who launch their boats would move into the creeks or along the shoreline areas of the James River to fish. Pleasure boaters and skiers would be expected to spend some of their time cruising the shoreline areas. Most pleasure boats of the size that would be launched from a private facility have drafts of two feet or less, well within a range that could bring the boats close to the shoreline. As previously discussed, boating activity can adversely impact eagles because it disrupts feeding activity and affects large areas in short periods of time (Knight and Knight 1984). Eagles usually avoid areas within 656 to 2,952 feet of a single stationary boat (McGarigal et al. 1991). Eagles are flushed by approaching boats at an average distance of 575 feet (Buehler et al. 1991a) and eagles flushed by boat from perch sites usually fly inland and cease foraging for at least several hours (Byrd 1989, pers. comm.).

While we can not quantify the impacts that increased boat use will have on the eagles that use this area, observations and studies indicate that the eagles will be exposed to increased disturbance and potentially to a decrease in foraging time. For example, in 1988, a bass tournament was held on the James River within the eagle concentration area. The increased boat use during that period appeared to be directly responsible for the significant decline in eagle use of the river during the period of the tournament. We would expect that the increase in boat use that would routinely occur if even a portion of the property owners on the James River or one subdivision constructed boat ramps or a number of piers would likewise cause an increase in disturbance to eagles.

A dramatic increase in boat traffic is likely to cause significant declines in bald eagle use of the James River. An increase in shoreline development would result in increased habitat loss through vegetation clearing and functional habitat loss resulting from eagle avoidance of developed areas and areas of human activity along the shoreline. Increased development concurrent with increased boat traffic could result in the eventual abandonment of the Powell Creek eagle concentration area. If this occurs, the summering, post-breeding, migrating, and resident birds from the three bald eagle recovery populations using this area may move into

isolated habitat patches in adjacent areas, if any are available. It is not unreasonable to assume that at least some eagles may have to move a great distance away to find suitable habitat and a source of food. This would result in decreased productivity for the resident nesting pairs. Impacts to non-resident birds are more difficult to quantify, but are likely to include increased migration distance and increased disturbance from human activities caused by the forced use of fragmented habitat, resulting in decreased energy intake, increased likelihood of injury or death, and decreased productivity.

OPINION OF THE SERVICE

The shoreline structures that are the subject of this consultation, combined with the indirect effects associated with human use of these facilities, will result in the loss or degradation of at least 227 acres of shoreline perching and roosting habitat and at least 239 acres of riverine foraging habitat for bald eagles. The indirect effects associated with the use of aquatic recreational vehicles from these facilities will result in the loss of foraging and perching habitat in areas of the James River that are traversed by these vehicles. Because the use of aquatic vehicles is unpredictable and eagle numbers may vary on a given shoreline segment, a total acreage of disturbance cannot be determined. However, based upon the distances and areas that such vehicles are likely to travel, eagles throughout the entire seven-mile concentration area could be adversely impacted through disturbance. The cumulative impacts of the proposed waterfront facilities, in conjunction with the cumulative effects of existing and reasonably foreseeable activities within and adjacent to the Powell Creek eagle concentration area, will adversely modify and appreciably reduce bald eagle habitat within the concentration area. Long-term impacts are likely to include reduction in the foraging habitat of both nesting and migratory eagles, and potential abandonment of the concentration area.

It is the opinion of the Service that the five projects that are the subject of this consultation are not likely to jeopardize the continued existence of the three bald eagle recovery populations that use the Powell Creek eagle concentration area. However, it is the Service's opinion that the projects will contribute to serious adverse impacts to the eagles that utilize this area, particularly in conjunction with the cumulative effects of existing and proposed human activities within and outside the concentration area. The largest summer eagle concentration area in the eastern United States, the Powell Creek area provides essential feeding and migratory habitat for the three bald eagle recovery populations of the eastern United States. Although this seven-mile segment of the James River has been relatively undisturbed until recently, development pressures are increasing. If significant shoreline development and increases in boat traffic continue, this essential eagle habitat will be lost. It is unknown whether there are other areas within the Chesapeake Bay that could provide suitable replacement habitat if the Powell Creek concentration area is lost. Under the Endangered Species Act, when formulating the biological opinion, the Service must provide the "benefit of the doubt" to the species concerned (50 CFR Part 402 Background, page 19952). It is the opinion of the Service that the loss of the Powell Creek eagle concentration area would have a major adverse effect on the continued recovery of the three eastern United States bald eagle populations.

INCIDENTAL TAKE

Sections 4(d) and 9 of the Endangered Species Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as such actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. The measures described below are nondiscretionary, and must be implemented by the Corps so that they become binding conditions of any permit issued to the applicant in order for the exemption in 7(o)(2) to apply. Pursuant to 50 CFR 402.14 (g)(7), the Service is to formulate a statement concerning the incidental take of a listed species. This statement must include the level of take that is anticipated to occur due to the Federal action. The Service is to develop, and the Federal agency and/or applicant is to implement, reasonable and prudent measures that will minimize the impacts of the action on the species. In addition, the Service must set the terms and conditions that must be complied with. If the level of incidental take is exceeded, formal consultation under Section 7 must be reinitiated.

The Corps has a continuing duty to regulate the activities that are covered by this incidental take statement. If the Corps fails to require the applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of 7(o)(2) may lapse. The measures described below are nondiscretionary, and must be made a binding condition of any DOA permit issued to Mr. Clements, Mr. and Mrs. Cruise, Mr. and Mrs. Jones, Mr. Sanford, and Mr. Ward.

Amount and Extent of Take

The Service anticipates that incidental take of bald eagles will occur in the form of harassment and harm. Bald eagles perch, forage, and roost adjacent to and across from the four properties on the James River and adjacent areas of the James River. Harm to eagles from the Cruise, Jones, Sanford, and Ward projects is expected to occur through permanent degradation of their perching and foraging habitat by means of vegetation clearing and construction of shoreline facilities, erosion control structures, and residential housing. The effects of clearing and development were discussed under "Effects of the Federal Action." It is not likely that eagles currently frequent the shoreline; however, eagles have been observed at the Charles City County park since its opening. It is not likely that eagles will utilize the residential area on the James after it is further developed because of the additional waterfront structures and boating activity, thereby decreasing the total amount of habitat available within the eagle concentration area. In addition, eagle use of the park will likely decrease and may stop because of the adjacent development and boating activity. Besides development, clearing and thinning of vegetation allows eagles to more easily view humans, increasing the

distance at which they will be disturbed by human activity within the residential area. Up to 466 acres of habitat within and around this developed area (including the park) is likely to be rendered physically and functionally unusable by eagles.

Harassment of eagles is likely to occur from the four James River projects in the form of disturbance of foraging and perching during the day and roosting at night as the shoreline facilities are used. Distances at which humans disturb eagles during the summer were previously cited under "Effects of the Federal Action." Based upon those distances, eagle habitat used for foraging, perching, and roosting within and 1,640 feet around the park and residential area could be affected by human activities. Aquatic recreational vehicles docked at the proposed facilities could result in avoidance of up to 2,952 feet around a given vehicle, making that area unavailable for eagle use. Harassment from all five projects is likely to occur through disturbance from aquatic recreational vehicles using the James River and its tributaries. Aquatic recreational vehicles utilizing the James and its tributaries will flush eagles foraging or perched within 164 feet of the shoreline. Each boat will flush eagles as it travels within the concentration area. Every time a boat stops, the area up to 2,952 feet around it will be avoided by eagles. When the boat moves again more birds will be flushed. A few boats fishing and moving along the shoreline could functionally eliminate a significant portion of the shoreline and riverine habitat from eagle use for an entire day. If the facilities are constructed as proposed, each applicant would have a pier or boathouse to moor to or keep a boat in. With the additional construction of boat ramps, the number of boats originating from an applicants' property is not predictable, but will likely increase. An increase in boat traffic would result in increased disturbance to eagles.

Reasonable and Prudent Measures

The incidental take statement provides measures that are necessary or appropriate to minimize take of the listed species. Such measures should decrease the level of take to the maximum extent possible or describe methods by which to replace the capability of the population or habitat to support preactivity levels. These measures are to be reasonable and prudent, meaning that the nature of the corrective action required is commensurate with the impact on the species/habitat (e.g., a minor effect on the species/habitat resulting from the action requires minor effort to minimize, while an anticipated significant, but not jeopardy, level of take may require substantially greater effort to minimize). Such measures are to be within the authority or capability of the agency or applicant to perform, and should not alter the basic purpose, location, scope or duration of the Federally permitted action. The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take.

Construction Impacts

Time-of-year restrictions are necessary on all construction and vegetation clearing on the James River. By conducting construction activities between October 1 and April 30, eagles

utilizing the concentration area will not be disturbed and forced to abandon foraging and perching sites.

Habitat Degradation

Clearing of vegetation should be kept to a minimum to maintain canopy cover. Clearing of vegetation allows eagles a better view of human activities occurring below the forest canopy, thereby increasing their flush and avoidance distance. The loss of vegetation, especially large trees, also decreases the amount of available perching and roosting habitat in the area. Shoreline construction must be minimized by not constructing facilities such as decks, finger piers, L-heads, or T-heads that are not necessary for shoreline erosion control and the safe use and secure mooring of a boat. As discussed under "Effect of the Federal Action," eagles rarely use developed areas and their numbers decrease with increasing numbers of shoreline structures. Buehler et al. (1991b) found that most summer eagle roosts in the Chesapeake Bay region were further from human development than random sites. Clark (1992) found that eagle abundance decreased with increased numbers of "... piers, boat ramps, and sites where boats are regularly landed or anchored on the shore...." Wallin and Byrd (1984) had similar findings within an eagle concentration area on the Potomac River in Virginia. Clark (1992) concluded that "increased numbers of waterfront buildings and decreased amounts of shoreline woodland also have been shown by this study to negatively affect eagle shoreline use." Because Mr. Sanford's permit was issued and built without Service consultation while conforming to Federal and state laws to the best of his knowledge, the Service will make an exception in this case only and not require the removal of the existing T-head.

Human Use and Disturbance

To minimize the extent of harassment to bald eagles, measures must be taken to reduce the level of human use and limit the number of boats within the eagle concentration area. To reduce the amount of human use of shoreline facilities, piers wider than six feet, open-sided boat houses, sun decks, and boat houses with rooftop decks should not be constructed. This will minimize the extent of human activity and the resulting chronic disturbance to eagles that perch and forage along the James River. To limit the number of boats, boat ramps should not be constructed within the eagle concentration area. The proposed piers will provide access for the waterfront property owners. The limit on boat ramps will minimize further harassment of eagles by precluding boats other than those of the property owners from launching from these shoreline facilities.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, Mr. Clements (as agent for Wortham Family Partnership), Mr. and Mrs. Cruise, Mr. and Mrs. Jones, Mr. Sanford, and Mr. Ward should be made responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions must be incorporated as binding conditions of any DOA permit issued by the Corps.

A. The following terms and conditions apply to Mr. and Mrs. Cruise:

1. There will be no construction of a boat ramp.

2. The boat house must conform to the following:

a. No construction of steps providing roof access. Roof cannot be used for sunbathing, observing wildlife, or any other activities.

b. Must be closed on three sides.

3. Construction of any shoreline structure or erosion control structure and associated clearing of vegetation will not occur between May 1 and September 30 of any year. In addition, maintenance of these structures will not occur between May 1 and September 30 of any year without the written approval of the Service.

4. After initial construction, maintenance of the shoreline facilities and erosion control structures may include the removal of understory vegetation, but vegetation removal must not occur between May 1 and September 30 of any year. Trees, dead or alive, greater than 12 inches in diameter (at four feet high) may not be removed without the approval of the Service.

B. The following terms and conditions apply to Mr. and Mrs. Jones:

1. There will be no construction of a boat ramp.

2. There will be no construction of finger piers.

3. There will be no construction of the 16-foot by 16-foot deck. The pier can be extended to 116 feet in length if necessary.

4. The boat house must conform to the following:

a. No construction of steps providing roof access. Roof cannot be used for sunbathing, observing wildlife, or any other activities.

b. Must be closed on three sides.

5. Construction of any shoreline structure or erosion control structure and associated clearing of vegetation will not occur between May 1 and September 30 of any year. In addition, maintenance of these structures will not occur between May 1 and September 30 of any year without the written approval of the Service.

6. After initial construction, maintenance of the shoreline facilities and erosion control structures may include the removal of understory vegetation, but vegetation removal must not occur between May 1 and September 30 of any year. Trees, dead or alive, greater than 12 inches in diameter (at four feet high) may not be removed without the approval of the Service.

C. The following terms and conditions apply to Mr. Sanford:

1. No more than two boats will be present at the facility at any time between May 1 and September 30 of any year.

2. Maintenance of any shoreline structure or erosion control structure and associated clearing of vegetation will not occur between May 1 and September 30 of any year without the written approval of the Service.

3. Maintenance of the shoreline facilities and erosion control structures may include the removal of understory vegetation, but vegetation removal must not occur between May 1 and September 30 of any year. Trees, dead or alive, greater than 12 inches in diameter (at four feet high) may not be removed without the approval of the Service.

D. The following terms and conditions apply to Mr. Ward:

1. There will be no construction of a boat ramp.

2. There will be no construction of an L-head or T-head.

3. The boat house must conform to the following:

a. No construction of steps providing roof access. Roof cannot be used for sunbathing, observing wildlife, or any other activities.

b. Must be closed on three sides.

4. Construction of any shoreline structure or erosion control structure and associated clearing of vegetation will not occur between May 1 and September 30 of any year. In addition, maintenance of these structures will not occur between May 1 and September 30 of any year without the written approval of the Service.

5. After initial construction, maintenance of the shoreline facilities and erosion control structures may include the removal of understory vegetation, but vegetation removal must not occur between May 1 and September 30 of any year. Trees, dead or alive, greater than 12 inches in diameter (at four feet high) may not be removed without the approval of the Service.

E. The following terms and conditions apply to Mr. Clements (agent for Wortham Family Partnership):

1. Between May 1 and September 30 of any year, no more than seven boats can be launched from the boat ramp per day.

2. A sign must be placed next to the boat ramp stating that only residents of the residential area are allowed to use the ramp. The sign must also state that non-residents are not allowed to use the ramp. The language for this sign must be approved by the Corps and the Service. The sign must be in place prior to use of the boat ramp.

3. After initial construction, maintenance of the shoreline facilities and erosion control structures may include the removal of understory vegetation. Trees, dead or alive, greater than 12 inches in diameter (at four feet high) may not be removed without the approval of the Service.

The incidental take statement provided in this Opinion satisfies the requirements of the Endangered Species Act, as amended. This statement does not constitute an authorization for take of listed migratory birds under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act or any other Federal statute.

Reporting and Monitoring Requirements

The terms and conditions of the incidental take statement will require Mr. Clements, Mr. and Mrs. Cruise, Mr. and Mrs. Jones, Mr. Sanford, and Mr. Ward to notify the Service upon the initiation and completion of the construction of the permitted shoreline and erosion control structures and for certain future maintenance activities. The contact for these reporting requirements is as follows:

Virginia Field Office
U.S. Fish and Wildlife Service
Mid-County Center, U.S. Route 17
P.O. Box 480
White Marsh, VA 23183
(804) 693-6694

Upon locating a dead, injured, or sick endangered or threatened species specimen, initial notification must be made to the nearest Fish and Wildlife Service Law Enforcement Office. Contact either of the following Law Enforcement offices:

Division of Law Enforcement
U.S. Fish and Wildlife Service
8301 Willis Church Road
Richmond, VA 23231
(804) 771-2481

Division of Law Enforcement
U.S. Fish and Wildlife Service

P.O. Box 187
Yorktown, VA 23690
(804) 890-0003

Care should be taken in handling sick or injured specimens to ensure effective treatment and care in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Endangered Species Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendation" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat.

The Service recommends that the Corps deny the construction of future boat ramps within the bald eagle concentration area. As discussed throughout this biological opinion, boat traffic adversely effects bald eagles and results in functional loss of habitat. Denial will avoid adverse impacts to bald eagles by restricting the amount of boat traffic within the eagle concentration area. In addition, the Service recommends that the Corps deny all future permit applications, except those involving erosion control, within the six eagle protection areas defined by Clark (1992) (Figure 4). These eagle protection areas are sites that included "... shoreline deemed highly significant to eagle use based on the following guiding criteria: all shoreline ranked as very high or high use by bald eagles, stretches of shoreline which provide a connecting corridor of continuous woodland habitat between two areas of very high or high use shoreline, and shoreline which represents potentially high or very high use shoreline habitat..." (Clark 1992). Each of the eagle protection areas includes water, land, and lateral buffer zones. The Charles City County park and the Sanford property are within one of the eagle protection areas because the area to the west of the park is high use shoreline for eagles, and the park and Sanford property are part of the buffer zone around it. However, before Clark's study was published, the Service's March 13, 1992 Biological Opinion for the County park was written and the County pier has been constructed. Therefore, the Sanford property no longer provides a buffer and is not a functioning part of this particular eagle protection area. In addition, the Service recommends that the Corps work with us in the future to determine the dimensions of a reasonable boat house on the James River.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitat, the Service requests notification by the Corps of the implementation of any conservation recommendations.

REINITIATION OF FORMAL CONSULTATION

This concludes formal consultation on this Federal action. As required by 50 CFR 402.16, reinitiation of formal consultation by the Corps is required if: (1) the amount or extent of incidental take is reached; (2) new information reveals effects of the action that may impact listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations that are causing such take must be stopped in the interim period between the initiation and completion of the new consultation if any additional taking is likely to occur.

If, during the course of the action, the amount or extent of the incidental take limit is reached, the Corps must reinitiate consultation with the Service immediately to avoid violation of Section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species, as required by 50 CFR 402.14(i). The Corps should provide an explanation of the causes of any such taking.

FISH AND WILDLIFE COORDINATION ACT REPORT

The description of the resources of the project site and the impacts associated with the construction and use of the proposed facilities included under the Service's Biological Opinion are pertinent to our comments under the Fish and Wildlife Coordination Act. It is the Service's position that this seven-mile stretch of the James River and its tributaries used by bald eagles as a summer concentration area is vitally important to the species' continued recovery in the eastern United States. The increased clearing of shoreline and upland vegetation and construction of houses combined with increasing boating pressure within the concentration area continues to degrade the area and decrease the amount of habitat available to eagles. At present, it is unknown at what point human disturbance will cause eagles to abandon the concentration area. We recommend that the Corps implement the "Conservation Recommendations" on pages 24-25 by denying present and future permit applications for boat ramp construction within this summer bald eagle concentration area and denial of future permit applications, excluding erosion control, within the six eagle protection areas defined by Clark (1992) (Figure 4).

We recommend that the conditions provided on pages 20-23 of the Biological Opinion be included as conditions of any DOA permit issued to Mr. Clements, Mr. and Mrs. Cruise, Mr. and Mrs. Jones, Mr. Sanford, and Mr. Ward. We also recommend that the DOA permit include a condition to require the use of silt fencing and straw bales landward of any riparian vegetation in any areas that land clearing and grading will occur.

Besides bald eagles, other migratory birds such as woodland warblers (Dendroica species), vireos (Vireo species), and flycatchers (Empidonax species), which are experiencing population declines, utilize large tracts of forest. Many of these birds require large, undisturbed, and generally mature forested areas to reproduce and sustain viable populations.

Clearing can subdivide forests, creating "islands" of habitat which are of unsuitable size for many of these species. Human activities associated with shoreline structures and upland development will also disturb these birds. In addition, water birds such as ospreys (Pandion haliaetus) and great blue herons (Ardea herodias) utilize wooded areas along the shoreline for perching, nesting, and foraging. Clearing and developing the shoreline disturbs these birds and may cause them to abandon a particular site.

The Service appreciates the opportunity to work with the Corps in fulfilling our mutual responsibilities under the Endangered Species Act and the Fish and Wildlife Coordination Act. Please contact Cindy Schulz of this office at (804) 693-6694 if you require additional information or wish to discuss our comments further.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

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Appendix A - Permit Application Drawings

Permit application drawings for CENAO-CO-R 91-0321-09, James Clements; 91-1412-18, Lindell and Constance Cruise; 91-1053-18, Russell and Nancy Jones; 91-0625-18, William Sanford; and 92-0129-18, Richard Ward.

Appendix B - Consultation History

06-20-91 The Service was notified by VDGIF that Mr. Sanford had built a pier on the James River.

07-10-91 The Service received a copy of the Corp's cease and desist letter to Mr. Sanford.

07-21-91 The Service received a copy of Mr. Sanford's permit application from the Corps.

08-02-91 The Service received a copy of the public notice for Mr. Sanford's permit application from the Corps.

08-15-91 The Service received a copy of Nancy and Russell Jones' permit application from the Corps.

10-28-91 The Service received a copy of Lindell and Constance Cruise's permit application from the Corps.

06-24-92 The Service received a copy of Richard Ward's permit application from the Corps.

06-24-92 The Service received a copy of James Clements' permit application from the Corps.

07-13-92 The Service participated in a boat survey of the action area with the Corps and VDGIF.

12-09-92 The Service received DNH's survey results for Mr. Clements shoreline.

12-18-92 The Service received the Corps' request for formal consultation.

01-28-93 The Corps requested a copy of the draft biological opinion.

03-05-93 The Service met with representatives of the Corps and VDGIF, and Mr. Jones and Mr. and Mrs. Cruise to discuss the Service's recommendations proposed to be included in the biological opinion.

04-21-93 The Service issued the draft biological opinion.

06-04-93 The Service received comments from the Corps and applicants on the draft biological opinion.

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